

## EXAMINATION OF THE EFFECT OF AN EMOTIONAL INTELLIGENCE IMPROVING DIRECTIONAL PSYCHO-EDUCATION PROGRAM IN SECONDARY SCHOOL STUDENTS' PROBLEM-SOLVING AND DECISION-MAKING SKILLS<sup>9</sup>

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### Abstract

*Individuals go through various problem-solving and decision-making processes to deal with the obstacles and problems they face in their daily lives. Development of decisions that are made in adolescence and problem-solving skills used throughout the life of the individual should be considered important. The purpose of the research is examining the effect of emotional intelligence training on the problem solving and decision-making skills of adolescents. This study is a real experimental model with a pretest-posttest control group. The study was conducted with the participation of 22 students attending secondary school in accordance with this model. In the conducted pretest results, which are firstly used for emotional intelligence, problem solving and decision-making skills were used in the experimental and control groups. Emotional Intelligence was revealed to be effective in the development of decision-making skills.*

### INTRODUCTION

The concept of emotion has been the subject of many researches from past to present; accordingly, various definitions have been established (Frijda, 2000). In some of these studies, emotions, are the result of psychological situations experienced by individuals in the face of events because of their own thoughts (White, 2010); emotions are a wide variety of experiences experienced as a reaction to internal or external stimuli (Datler, 2013); emotions are the forces that prepare and motivate the individual to take action

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<sup>9</sup> This study was partially presented in the 21st International Psychological Counseling and Guidance Congress in Antalya, Turkey.

(Frijda, 2000); psychological and biological states and a series of movement tendencies (Goleman, 2007) and the individual's response to relationships (Mayer, 2001) is defined as an emotional reaction. Emotions are the basis for an individual to show the necessary harmony for gaining life skills (Ekman & Davidson, 1994). These feelings are biological processes that develop suddenly and uncontrollably (Benson, at all, 2012). The beginning point of emotions is the nervous system, and based on this, it reveals the underlying brain mechanisms (Le Doux, 2006). The connections between the amygdala and the neocortex, which are part of the limbic system in the nervous system and have a primary role in the formation of emotional memory and reactions, are the main center of the mind, heart, emotion, thought and behavior, so it can be said that emotions are present even in the background of superior decisions (Goleman, 2011). When the human brain receives any signs, it tends to react to fear, suspicion, astonishment, joy and relaxation (Le Doux, 2006). Although emotions are common to all people, their use may vary according to individuals (Petrides & Furnham, 2003). Emotions also occur differently in each person. At the same time, humans have intelligence in the context of emotional thought.

Emotional intelligence emerged for the first time as a product of multiple intelligence thought. Gardner, the pioneer of multiple intelligence theory, has described intelligence as the ability to use problem-solving skills as a cultural product (Gardner & Hatch, 1990). Mayer, DiPaolo and Salovey (1990), for the purpose of revealing the difference between understanding and understanding of emotions among individuals, first expressed emotional intelligence as a concept. Solving problems and making wise decisions using both thoughts and feelings or logic and intuition is part of emotional intelligence (Mayer & Salovey, 1997; Salovey & Mayer, 1990). Emotional intelligence is the ability to perceive and make sense of emotions, to regulate emotions (Mayer & Salovey, 1997), non-cognitive capacity and coping competence affecting external processes (Bar-On, 2005), self-control, self-motivation, determination and the ability to show patience (Goleman, 1995), to recognize and then differentiate oneself and others' emotions, and then use it as a guide (Salovey & Mayer, 1990). Emotional intelligence also involves recognizing and evaluating our own and others' emotions as well as information about emotions and emotions in our daily lives and work effectively to reflect the energy allowing us to respond appropriately (Yeşilyaprak, 2001). These reactions affect people's ability to solve problems.

Problem solving is the process of converting a number of conditions to a preferred result (Stevens, 1998), finding new solutions (Korkut, 2002) and a series of efforts to eliminate the difficulties faced (Ünsal & Ergin, 2011; Morgan, 2004) and the factors that prevent the individual from action (Adair, 2000). Frey, Hirschgstein and Guzzo (2000) consider problem solving as one of the social-emotional competences. Additionally, Arenofsky (2001) considers problem solving as structuring the appropriate strategy for the problem, collecting the data and obtaining the necessary information and resources for the implementation of the formed strategy. Problem solving is a skill that must be learned and acquired (Bingham, 2004). Furthermore, problem-solving is a complex process required to succeed in life (Greenwood, Walker, Carta & Higgins, 2006). Problem solving

skills are learned from childhood and developed during school years (Miller & Nunn, 2001). It is stated that individuals who solve problems effectively are independent and creative thinkers who have social competences, are confident and can tolerate uncertainty (Dow & Mayer, 2004). Problem solving contributes to an individual's knowledge, skills and behavior (Exley & Dennick, 2004). In problem solving, the individual re-organizes and uses previously acquired concepts and skills to solve problems encountered (Ünsal & Ergin, 2011). The ability to solve problems involves the use of cognitive abilities to make decisions and make the most appropriate decisions (Agran, Blanchard, Wehmeyer & Hughes, 2002).

Some researchers argue that problem-solving and decision-making processes are similar, so these concepts should be used together (Adair, 2000; Churney, 2001; Kushniruk, 2000). Today, the concept of problem solving is expressed as an element of cognition that is intertwined with terms such as thinking, decision making and judgment (Green & Gilhooly, 2012). Decision-making is the process of thinking through alternatives (Welton & Mallan, 1999). According to another view, the concepts of problem solving and decision making are different from each other (Elstein & Schwarz, 2002; Isen, 2001). Making decisions is generally defined as choosing among alternatives (Connor & Becker, 2003; Rollinson, 2002), and it is stated that if there is only one option to choose, decision making cannot be utilized (Rollinson, 2002). In addition to being the most common type of problem we face in our daily and professional lives, decision making represents the basic processes for solving more complex and poorly structured problems (Means, Salas, Crandall & Jacobs, 1993). In other words, decision making involves selecting one or more useful or satisfying options from a wider set of options. These options may include requirements, strategies, events, forecasts or opportunities. However, the decision always requires adherence to an action process that aims to give satisfactory results to an individual (Yates, 2003). Although there is extensive literature on decision analysis and decision-making processes, little attention has been paid to teaching students how to make effective decisions (Jonassen, 2012). In a study that was conducted for adolescents, Borders (2009) used a teaching technique to divulge the necessary decision-making skills for adolescents to reach constructive goals.

When the literature is examined, it is seen that there are studies examining the relationship between emotional awareness and expressing emotions and family education level and gender variables (Schilling, 1996; Harrod & Scheer, 2005). On the other hand, it was noted that the studies conducted on adolescents frequently cover the secondary education level. Considering that adolescence starts in the middle school years and the most intense stages take place during these years, there is a need for studies to be carried out on this stage. Developing these skills is considered to be important when it comes to the effectiveness of the decisions taken during adolescence and the problem-solving skills used throughout the life of the individual. This study aimed to investigate the effect of

psycho-education programs on developing the emotional intelligence on problem solving and decision-making skills of secondary school students. For the following reasons, it is predicted that there will be a significant improvement in the problem-solving and decision-making skills of participants.

The hypotheses of the research are as in the following:

There will be no significant difference between the pretest scores of the experimental and control groups pertaining to the problem-solving and decision-making skills of secondary school students.

There will be a meaningful improvement in the problem-solving and decision-making skills of the secondary school students who applied psycho-education program to improve emotional intelligence compared to the subjects in the control group, and this improvement will continue in the monitoring measurement of 45 days after the completion of the applications.

## Method

### Research Model

This study is an experimental study that aimed to determine the effect of psycho-education programs on problem solving and the decision-making skills of secondary school students. In the research, a real experimental design with a 2x3 factor mixed (split-plot) pretest and posttest control group defined as two-factor mixed design (Büyüköztürk, 2002; Plano, Clark & Creswell, 2015) was used. In this design, the first factor shows independent process groups (experiment, control), while the other factor includes pretest, posttest and monitoring measurements of the dependent variable.

### Study Group

In this study, firstly the sample age group was specified by taking the need in the literature and the competence of the practitioner into consideration, and so it was decided that the sample group should be secondary school students. The study was conducted with students studying at a secondary school in Usak during the 2017-2018 academic year. The Emotional Intelligence Scale (EIS), Problem Solving Scale (PSI) and Decision-Making Scale (DCS) were used to select the participants in the experimental and control groups. As a result of the counseling, interviews and scales applied by the school counselor, 11 secondary school students were included in the experimental group. Eleven students were selected from the other middle school students in the same school by random selection forming a control group. The age range of the students in the research group varies between 12 and 13. Measurement tools were applied as pretest before the application and as posttest at the end of the application. Monitoring scaling was performed 45 days after the completion of the applications.

### Development of Psycho-education Program for Developing Emotional Intelligence

In this study, a 10-session psycho-training program was developed based on the literature and applied to 11 experimental groups (6 girls and 5 boys). No application was made to the control group. An interview was held with the school counselor who was

planned to perform the practice and the subject that the students needed the most was determined as the subject of the psycho-education program, and as a result, the Taba-Tyler model was adopted and program development studies were carried out in eight stages. These stages include: a) identification of needs, b) identification of objectives, c) selection of content, d) arrangement of content, e) selection of learning experiences, f) regulation of learning activities, g) determination of what to evaluate and h) sequence of program elements and control of relationships (Oliva, 1988). While developing the program, Erkan's (2002) "Sample Group Guidance Activities" book, Reuven Bar-On's Emotional Intelligence Model (Bar-On), Köksal's (2007) thesis "Development of a program to develop emotional intelligence in wunderkinds" and the Ministry of National Education (MEB, 2007) Primary and Secondary Education Institutions Class Guidance Program Secondary Education Activities book were benefited from. Besides, before applying this program to the experimental group, the opinions of three experts with a doctoral qualification in the field of psychological counseling were consulted and the program was prepared in-line with these opinions.

This program was implemented in the group counseling center of a secondary school in Uşak in the 2018-2019 academic year after obtaining the necessary permission from the school administration and parents. The psycho-education program was held on Tuesdays every week after the end of the school classes. A total of ten sessions took place, each session lasting approximately 45 minutes.

This program is designed to increase the emotional intelligence of middle school students in general. However, the steps that have been determined to help express emotions, improve their expressive skills and increase their psychological and personal well-being are as follows: a) having knowledge about emotions, b) expressing emotions in a concrete way, c) establishing emotion-sensory relationships, d) awareness of the relationship between emotion and bodily reaction, e) awareness of positive and negative emotions, f) ability to express their emotions using I language g) awareness of others' emotions, h) understanding of emotional intelligence levels and i) solving personal problems by developing decision-making skills.

In these sessions, after meeting in the group, the students were asked what they knew about emotions. After each student shared in turn, a common emotion definition was made based on information that the students shared and brief information was provided by the group leader. Emotion and emotional intelligence were defined. Between sessions, students were given homework "The Child that make Friends with his/her Feelings / Dr. Lauren Rubenstein" and their feelings or which page they were on were evaluated. Activities were conducted to improve the problem solving and decision making-skills of emotional intelligence. A psychodrama game was conducted in order to enable students to confront their emotions after playing a role to improve problem-solving and decision-making skills.

In the last two sessions, a study of the effects of the program aimed at increasing emotional intelligence as well as applications to improve problem-solving and decision-making skills were conducted. In the last session, a "gossip" activity was held for the students to reflect upon the beginning and current changes. In addition, considering the age and developmental characteristics of the participants, role playing and exercises were facilitated for group communication.

#### Data Collecting Tools

##### Bar-On Emotional Intelligence Test Child and Adolescent Short Form:

Within the frame of the research, "Bar-On Emotional Intelligence Test Child and Adolescent Short Form," which was originally developed by Bar-On (2006) and adapted to Turkish by Karabulut (2012), was used to determine the emotional intelligence levels of the students. The scale consists of 25 items consisting of 4-point likert-type scale. The internal consistency coefficients of the scale adapted for the 4th and 5th grade students vary between .69 and .83 (Karabulut, 2012). In this research, the Cronbach alpha internal consistency coefficient of the whole scale was calculated as .73.

##### Problem Solving Inventory:

In the context of the research as a data collection tool, the original version was developed by Heppner and Petersen (1982) in order to measure students' perceptions of problem-solving skills. Its Turkish adaptation study conducted by Şahin, Şahin and Heppner (1993) "Problem Solving Inventory" was used. The scale used by Kardaş, Anagün and Yalçinoğlu was adapted to primary school students in 2014. The scale consists of a total of 35 items of Likert-type scored between 1 and 6. The results of the confirmatory factor analysis revealed that the Turkish version of the inventory, which was originally composed of three factors and 32 items, was composed of 20 items and the original inventory was composed of three sub-factors (Kardaş, Anagün, & Yalçinoğlu, 2014). The internal consistency coefficient of the adapted scale was found to be .83 (Şahin et al., 1993). In this study, the Cronbach alpha internal consistency coefficient of the whole scale was calculated as .89.

##### Decision Making Scale in Adolescents:

In the scope of the research as the third data collection tool, the original version was developed by Mann, Harmoni and Power (1989) for the purpose of determining the decision-making styles of adolescents in the 13 to 15 age group, and the adaptation study to Turkish was conducted by Çolakkadıoğlu and Güçray (2007). The "Adolescent Decision-Making Scale" was used. The scale consists of 25 items consisting of 4 likert-type items. The internal consistency coefficients of the adapted scale ranged between .65 and .79 (Çolakkadıoğlu & Güçray, 2007). In this study, the Cronbach alpha internal consistency coefficient of the whole scale was calculated as .80.

#### Analysis of the Data

Since the study sample consisted of a total of 22 students in the experimental and control groups, it is not expected to show a normal distribution, so it was considered

appropriate to use non-parametric tests for the present study. In the study, the meaningfulness level was accepted as .05 and .01.

#### Findings

The Mann-Whitney U test was used to determine whether there is a significant difference between the pretest total scores of emotional intelligence, problem-solving and decision-making skills of middle school students in the experimental and control groups, and the data obtained are given in Table 1.

Table 1. Mann-Whitney U test results related to scale total scores and pretest scores of experiment and control groups

Scale	Groups	N	Rank Average	Rank Total	U	p
Emotional Intelligence	Experiment	11	9.18	101.00	35.00	.093
	Control	11	13.82	152.00		
Problem Solving	Experiment	11	13.45	148.00	39.00	.158
	Control	11	9.55	105.00		
Decision Making	Experiment	11	12.23	134.50	52.50	.597
	Control	11	10.77	118.50		

$p > .05$

As seen in Table 1, there was no significant difference in the total scores of emotional intelligence, problem-solving and decision-making skills of the students in the experimental and control groups. This finding shows that the students in the experimental and control groups are close to each other in terms of emotional intelligence, problem-solving and decision-making skills.

The Wilcoxon signed-rank test was used to test the difference between the scores obtained from the pretest and posttest measurements of the total scores of emotional intelligence, problem-solving and decision-making skills of the students in the experimental group, and the results obtained are given in Table 2.

Table 2. Wilcoxon signed-rank test analysis results related to scale total scores and pretest and posttest scores of the experiment group students

Groups	Pretest-Posttest	N	Rank Averages	Rank Total	Z	p
Emotional Intelligence Pretest	Negative Rank	3	2.00	6.00	-2.402	.016*
	Positive Rank	8	7.50	60.00		
Emotional Intelligence Posttest	Equal	0				

Problem Solving pretest	Negative Rank	10	1.00	1.00		
Problem Solving Posttest	Positive Rank	1	6.50	65.00	-2.845	.004**
	Equal	0				
Decision Making Pretest	Negative Rank	10	4.00	4.00		
Decision Making Posttest	Positive Rank	1	6.20	62.00	-2.580	.010*
	Equal	0				

\*\*p<.01, \*p<.05

As shown in Table 2, the total difference among emotional intelligence [ $Z = -2.402$ ,  $p < .05$ ], problem-solving [ $Z = -2.845$ ,  $p < .01$ ] and decision-making skills of students in the experimental group [ $Z = -2.580$ ,  $p < .05$ ], was found to be significant. This finding shows that the posttest scores of the students in the experimental group differ significantly from the pretest scores. Based on this finding, it can be said that the 10-session psycho-education program aimed at increasing emotional intelligence had a positive effect on the students' emotional intelligence, problem-solving and decision-making skills.

The Wilcoxon signed-rank test was used to test the difference between the scores obtained from the pretest and posttest in the total scores of emotional intelligence, problem-solving and decision-making skills of the students in the control group, and the results obtained are shown in Table 3.

Table 3. Wilcoxon signed rank test analysis results related to scale total scores and pretest-posttest scores of the students in the research group

Groups		Prestest- Posttest	N	Rank Averages	Rank Total	Z	p
Emotional Intelligence Pretest		Negative Rank	0	.00	.00	-	.317
			1	1.00	1.00	1.000	
		Equal	10				
Problem Solving Pretest		Negative Rank	5	6.40	32.00	-.089	.929
			6	5.67	34.00		
		Equal	0				
Problem Solving Posttest		Negative Rank	0				
		Equal					
Decision Making Pretest		Negative Rank	1	4.50	4.50	-	.057
			7	4.50	31.50	1.902	
		Equal	3				



Posttest	Rank Equal
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>.05

Table 3 shows the total scores for emotional intelligence [ $Z = -1.000$ ,  $p > .05$ ], problem-solving [ $Z = -.089$ ,  $p > .05$ ] and decision-making skills of students in the control group [ $Z = -1.902$ ,  $p > .05$ ]. This finding shows that the pretest and posttest scores of the control group did not differ significantly. In the basis of this finding, it can be said that time and other environmental factors have no effect on emotional intelligence problem-solving and decision-making skills of the students in the control group.

The Mann-Whitney U test was used to determine whether there is a significant difference between the total scores of emotional intelligence, problem-solving and decision-making skills of middle school students in the experimental and control groups and the data acquired are shown in Table 4.

Table 4. Mann-Whitney U test results related to scale total scores and post test scores of experiment and control groups

Scale	Groups	N	Rank Average	Rank Total	U	p
Emotional Intelligence	Experimental	11	16.23	178.50	8.50 0	.001 **
	Control	11	6.77	74.50		
Problem Solving	Experimental	11	14.41	158.00	28.5 0	.035 *
	Control	11	8.59	94.00		
Decision Making	Experimental	11	15.09	166.00	21.0 0	.009 **
	Control	11	7.91	87.00		

\*\* $p < .01$ , \* $p < .05$

As seen in Table 4, the difference in the total scores of emotional intelligence, problem-solving and decision-making skills of the students in the experimental and control groups was found to be significant. This finding shows that the posttest scores of the students in the experimental group differ significantly from the students in the control group. From this point of view for the finding, it can be said that the 10-session psycho-education program aimed at increasing emotional intelligence had a positive effect on the emotional

intelligence, problem-solving and decision-making skills of the students in the experimental group.

#### Discussion/ Result and Suggestions

During the course of this study, the effect of the psycho-education program on the problem-solving and decision-making skills of the secondary school students in the development of emotional intelligence was examined. In addition, it was observed that the posttest scores of the students in the experimental group differed significantly from the pretest scores, but no significant difference was found between the pretest and posttest scores of the control group students. While this finding shows that the students in the experimental and control groups were initially close to each other in terms of emotional intelligence, problem-solving and decision-making skills, the posttest results after the application of the emotional intelligence development-oriented psycho-education program to the students in the experimental group were compared. It was found to be effective in the development of giving skills. The results of the study support the findings of the study on emotional intelligence education conducted with 52 ninth-grade students (Tufan, 2011). Similarly, another study conducted with 68 university students support the results of the present study (Shao, Yu & Ji, 2013). The findings of the study conducted by Di Fabio and Kenny (2012), which examined the relationship between emotional intelligence skills and decision-making styles, are in parallel with the present study.

Emotional intelligence as a type of intelligence (Gardner, 1993; Sternberg, 1988) is the body's reactions to a specific stimulus, and the ability to regulate these responses can be increased by variation according to the individual (Gross, 1998; Gross & Thompson, 2007). The individual's emotional skills emerge from birth and develop rapidly in early childhood (Denham, Blair, DeMulder, Levitas, Sawyer, & Auerbach-Major, 2003). While basic emotions such as happiness, sadness and anger are seen from infancy, it is seen that more complex emotions, such as guilt and regret, emerge in later ages (Çelik, Tuğrul & Yalçın, 2002). This emotional development involves the child's ability to recognize his or her emotions, to regulate and control his or her emotions and to establish emotion by transferring them to different situations (Bar-On, 2006). Therefore, besides the biological basis of emotional intelligence, it can be said that it is also effective on social development (Denham, 1998). Sociobiologists argue that emotions adapt to life by asserting that feelings of anger protect us from the aggression of others, that pleasure and happiness pave the way for individuals to approach each other and continue their species and that the crying behavior of the individual in sorrow and grief seeks assistance from others (Cüceloğlu, 1991). Similarly, Ekman (1992) stated that emotions are a source of motivation for quality of life and that it helps the individual to adapt to nature and society by increasing the probability of survival.

Emotions are also important in terms of determining the direction of human behavior towards objects, ideas and others, protecting the values of the individual in certain situations and coping with the obstacles encountered by the individual (Schilling, 1996).

When emotions increase in a situation that is important for the individual or as a result of a change in their relations with others (Lazarus, 1994), it can be said that they carry meaningful messages for communication and interaction (Schwarz & Clore, 1983).

Goleman stated that individuals with a high level of emotional intelligence do not resist obstacles, control their impulses and are full of hope and empathy for life (Stubbs & Wolff, 2008). Schilling (1996) said that these individuals were able to take, process and evaluate information in nature and turn them into emotional behavior. Similarly, Yeşilyaprak (2001) stated that individuals can use emotional intelligence in order to recognize and evaluate their own and others' emotions and reflect their knowledge and energy effectively in daily life and describe people who use their emotions effectively to achieve their goals. The concept of emotional intelligence, which has become increasingly common from the past to the present, has shown that people are not a biological machine (Suliman & Al-Shaikh, 2007), and as a result employers have directed their employees to various emotional intelligence development courses (Wong & Law, 2002). The emotional skills of children who grew up without communicating with people face-to-face in front of the television and computer did not improve, and this result increased the need for educational programs to develop their emotional intelligence (Yaşarsoy, 2006).

In view of the fact that emotions emerge and can be developed at an early age, it is thought that emotional awareness and empathy training starting from the pre-school period and continuing in the following levels will be effective in structuring individuals with drama according to the developmental period. The learning environment and the role of the teacher are of great importance in the acquisition of these skills. For this reason, teachers should possess enough information about emotional intelligence and be able to organize an environment that is conducive to improvement. It is thought that conducting in-service training or teaching emotional literacy courses as elective courses in the faculty of education will be effective for improving awareness of emotional intelligence among teachers. In addition, it is thought that this training will be provided by school psychological counselors as a consultation service to other teachers and families within the scope of preventive and developmental guidance to students and will contribute to the development of students at cognitive and social levels.

A high level of emotional intelligence, which is effective for decision making and problem solving, encourages students to communicate more effectively and will contribute to the creation of positive learning environments. It is thought that various studies and training programs will contribute to the field.

For raising the effectiveness of psycho-education programs, which are directed towards the development of emotional intelligence, applying this program to students of different ages and levels of education may be suggested. While preparing the psycho-education program, activities based on humanitarian theory were used. In a new group study, different approaches such as behavioral theory and cognitive theory may be

preferred. In addition, a monitoring test was performed 45 days after the psycho-education application. Multiple monitoring tests can be performed at different intervals to test the effectiveness of the study. In addition to the psycho-education program to develop emotional intelligence to increase problem-solving and decision-making skills, individual sessions can also be held with the participants. Finally, experts working in the field of psychological counseling can adapt this program to the needs of their students and institutions. Furthermore, studies can be conducted with larger groups in order to increase the problem-solving and decision-making skills of the students in educational institutions at the secondary level.

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